

MATERIAL:

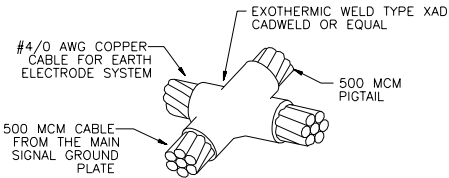
CASTING – BRONZE ALLOY
HARDWARE – SILICONE BRONZE OR STAINLESS STEEL

NOTES:

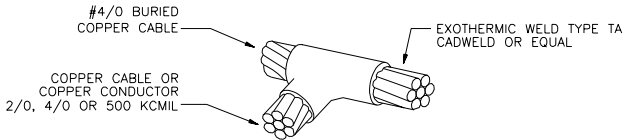
1. NUMBER OF U-BOLT CLAMPS TO BE USED IS TO BE BASED ON A SPACING OF 36" MAXIMUM TO ATTACH AIR TERMINALS AND/OR DOWN CONDUCTOR TO SUPPORT.
2. ORDER PROPER SIZE U-BOLT CLAMP TO FIT CABLE, SDT-1010 OR LARGER.

U-BOLT TYPE CLAMP DETAIL "1"

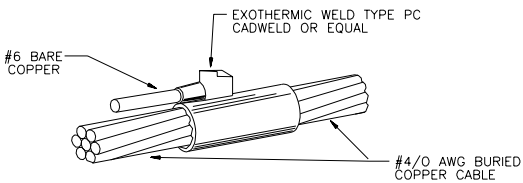
DOWN CONDUCTOR OR AIR TERMINAL TO
PIPE AIR TERMINAL STANDARD
NOT TO SCALE



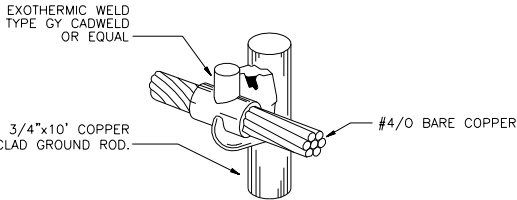
DETAIL "2"
CABLE TO CABLE CROSS CONNECTION DETAIL



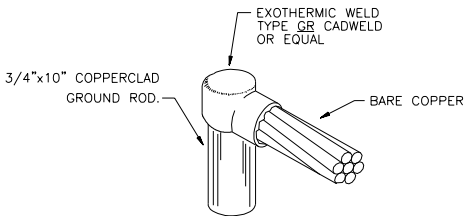
DETAIL "3"
CABLE TO CABLE "T" CONNECTION DETAIL



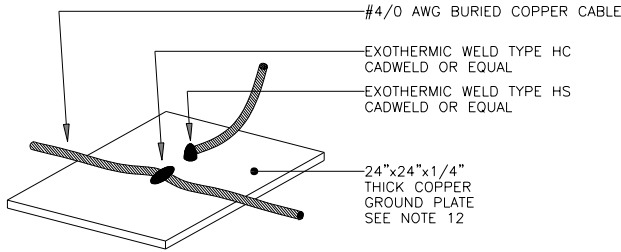
DETAIL "4"
GROUNDING TO COUNTERPOISE DETAIL



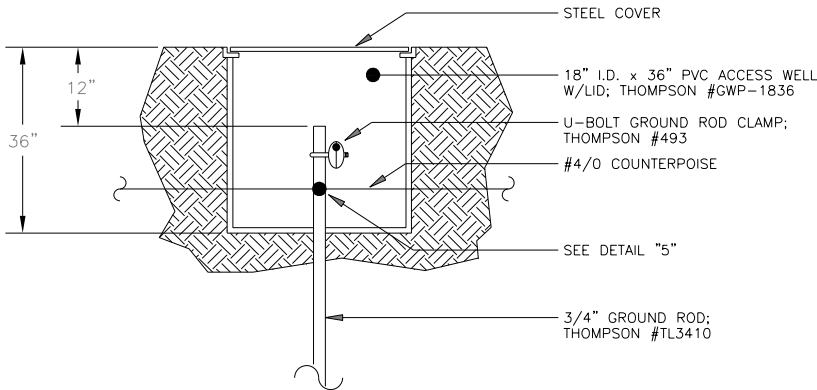
DETAIL "5"
GROUND ROD CONNECTION DETAIL



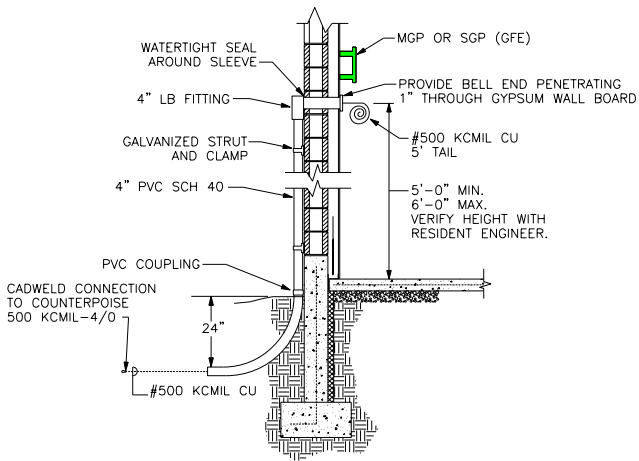
DETAIL "6"
CABLE TO GROUND ROD DETAIL



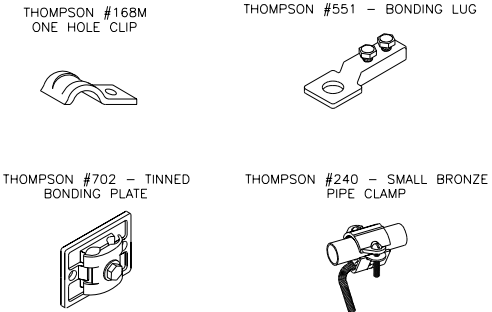
DETAIL "7"
CABLE TO GROUND PLATE DETAIL



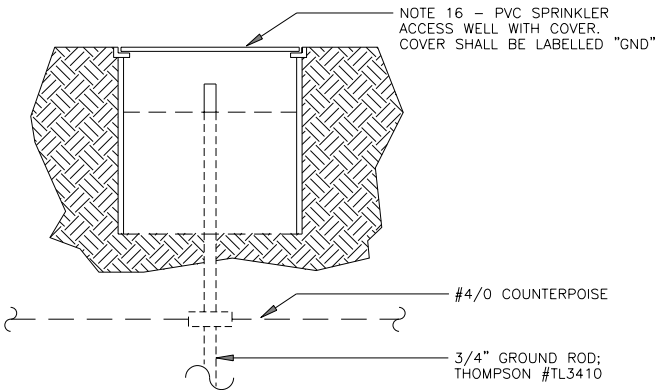
DETAIL "8"
GROUND ACCESS WELL DETAIL



MAIN GROUND PLATE DETAIL
NOT TO SCALE



MISCELLANEOUS BONDS AND CLAMPS
NOT TO SCALE

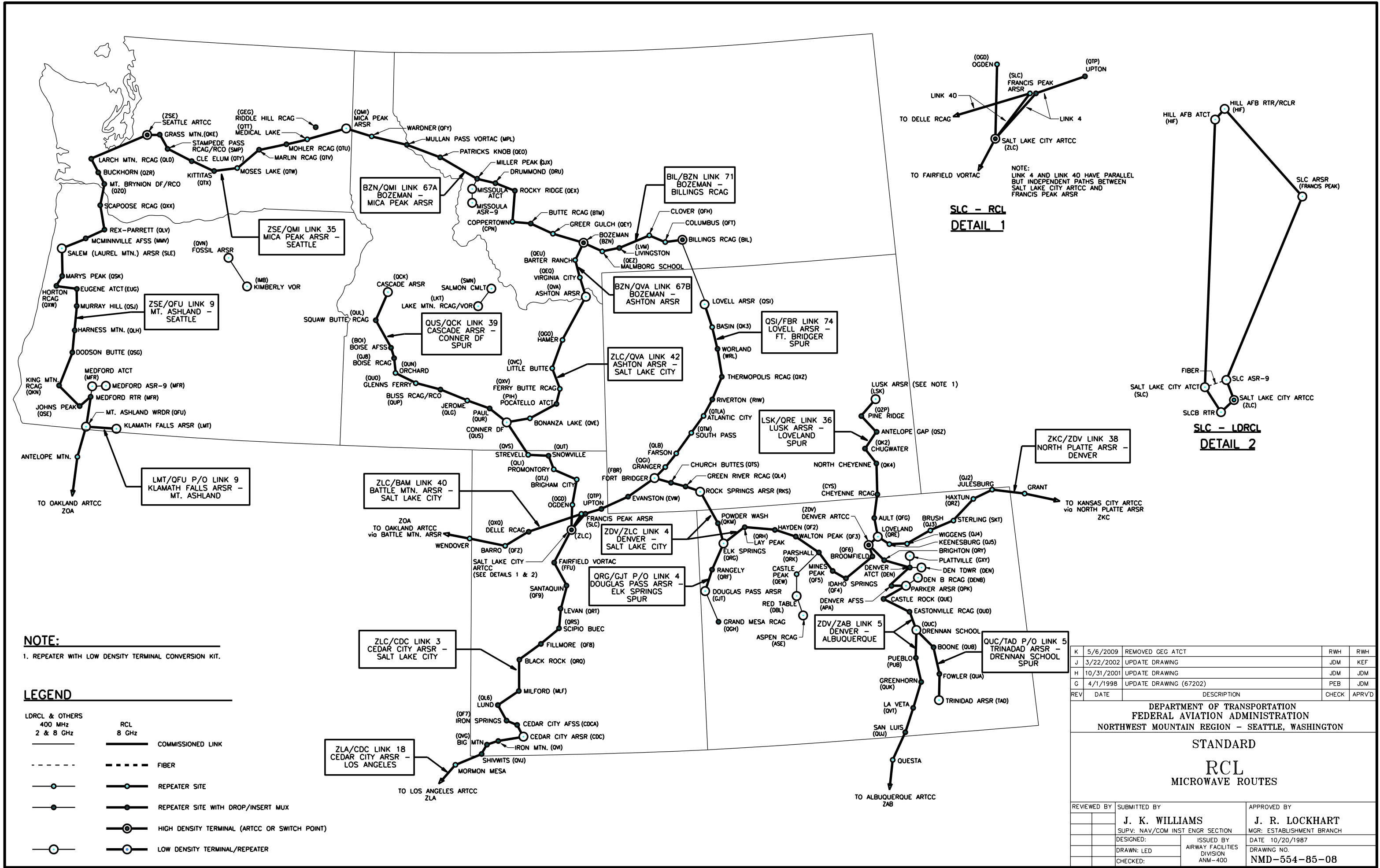


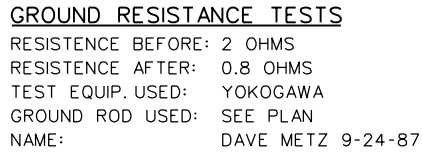
DETAIL "9"
GROUND ROD LOCATOR BOX

NOTES:

1. ALL MAIN CONDUCTORS AND DOWN CONDUCTORS SHALL BE IN ACCORDANCE WITH NFPA 780 – LIGHTNING PROTECTION CODE.
FOR CLASS I CONDUCTOR: CONDUCTOR SHALL BE THOMPSON 32S OR APPROVED EQUAL.
FOR CLASS II CONDUCTOR: CONDUCTOR SHALL BE THOMPSON 28R FOR BUILDINGS OR STRUCTURES UP TO 125'-0" TALL.
CONDUCTOR SHALL BE THOMPSON 507 FOR ALL STRUCTURES MORE THAN 125'-0" TALL OR APPROVED EQUAL.
DOWN CONDUCTOR BEND RADIUS SHALL BE 8" MINIMUM. NO BEND OF A CONDUCTOR SHALL FORM AN INCLUDED ANGLE OF LESS THAN 90 DEGREES.
2. DISTANCE BETWEEN CLAMPS ATTACHING CONDUCTORS TO SUPPORT SHALL BE 36" MAX.
3. SCRAPE BONDING SURFACES UNDER CLAMPS AND BRACKETS TO BARE METAL, SECURE HARDWARE AND COAT WITH ZINC RICH COMPOUND.
4. INSTALL BURIED COUNTERPOISE 24" BELOW GRADE AND 2 FEET TO 6 FEET FROM STRUCTURE BEING PROTECTED.
5. INSTALL THOMPSON #28R OR #507 DOWN CONDUCTORS. FASTEN TO STRUCTURE WITH THOMPSON #142HD FLAT CLAMP OR EQUAL PER NOTES 2 AND 3.
6. ROUTE DOWN CONDUCTORS FROM EACH CORNER OF BUILDING OR STRUCTURE. DO NOT ROUTE DOWN CONDUCTORS WITH OTHER ELECTRICAL CABLES.
7. CONNECT GROUNDING ELECTRODE SYSTEM SHOWN TO ANY ADJACENT OR NEAR VICINITY GROUNDING SYSTEM USING BARE #4/0 AWG COPPER CABLE BURIED 24" BELOW GRADE WITH EXOTHERMIC WELD CONNECTIONS.
8. EXTEND CABLE 1" (MAX) BEYOND TERMINATING CONNECTIONS AND FITTINGS.
9. ALL HARDWARE SHALL BE COPPER, BRONZE OR STAINLESS STEEL. NO ALUMINUM CABLE OR HARDWARE SHALL BE USED.
10. USE DRIVING STUD OR NUT TO PREVENT DAMAGE TO DRIVEN END OF GROUND ROD AND PERMIT PLACING EXOTHERMIC WELD MOLD AT TOP OF GROUND ROD WHEN IT HAS REACHED IT'S INTENDED DEPTH.
11. CONNECT MAIN GROUND CABLE TO INSULATED GROUND PLATE INSIDE BUILDING WITH COPPER ALLOY GROUND LUG.
12. WHERE GROUND RODS CANNOT BE DRIVEN INTO THE EARTH, SUBSTITUTE 24"x24"x1/4" THICK COPPER GROUND PLATES IF APPROVED BY THE RESIDENT ENGINEER. PLATES SHALL BE INSTALLED VERTICALLY WITH THE TOPS OF THE PLATES NOT CLOSER THAN 12" TO THE GROUNDLINE.
13. THE GROUNDING ELECTRODE CONDUCTOR FOR THE ELECTRIC SERVICE SHALL BE CONNECTED TO A NEW 3/4"x10' COPPERCLAD GROUND ROD WITH AN EXOTHERMIC WELD. THE 4/0 COUNTERPOISE SHALL BE EXOTHERMICALLY WELDED TO THE SAME GROUND ROD.
14. DOWN CONDUCTORS SHALL BE INTERCONNECTED BY A HALO RING TYING TOGETHER ALL AIR TERMINALS FORMING A TWO-WAY PATH HORIZONTALLY AND DOWNWARD TO CONNECT DIRECTLY TO A GROUND ROD ON EARTH ELECTRODE SYSTEM.
15. CABLE CONNECTIONS TO ALL GROUND PLATES SHALL BE MADE WITH COPPER ALLOY GROUND LUGS.
16. GROUND ROD LOCATOR BOX – INSTALL PVC SPRINKLER ACCESS WELLS WITH COVERS OVER NEW AND EXPOSED GROUND RODS. WELLS USED FOR FUTURE DIAGNOSIS.

D	05/12/2004	ADDED MAIN GROUND PLATE DETAIL & MISC BONDS/CLAMPS	DKL	DKL
C	08/29/2001	ADDED DETAIL 9 & NOTE 16	JVI	JVI
B	08/28/2001	UPDATED DETAILS	JVI	JVI
A	05/23/2000	UPDATED DETAILS	JRD	DKR
REV	DATE	DESCRIPTION	CHECK	APR'VD
DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION NORTHWEST MOUNTAIN REGION – SEATTLE, WASHINGTON				
STANDARD				
GROUNDING DETAILS				
REVIEWED BY	SUBMITTED BY		APPROVED BY	
	KRIS E. FRAME		MICHAEL A. DASOVICH	
	SUPV: REFURB. UNIT		MANAGER: ENVIRONMENTAL ENGR.	
	DESIGNED:	ISSUED BY AIRWAY FACILITIES DIVISION ANM-400	DATE 03/05/1993	
	DRAWN: T.O		DRAWING NO.	
	CHECKED: M.N		NMD-000-92-22	





- ① INSTALL GROUNDING PLATE ON TOWER
WITHIN 2' OF MICROWAVE GUIDE BEND
BEND IS APPROXIMATELY 10FT OFF GROUND
- ② IF DISTANCE BETWEEN TOWER AND BUILDING > 10'
INSTALL GROUNDING PLATE ON BUILDING WALL.
BUILDING GROUND PLATE MOUNTED @ 6' - 8' AGL
- ③ ROUTE 4/0 BARE 19 STRAND COPPER
FROM GROUNDING PLATE TO THE EES
- ③ ROUTE 4/0 AWG THROUGH TOWER WITH:
1) HANGER BRACKETS
2) BUTTERFLY HANGERS
3) COLD CHIRING
SPACE CABLE EVERY 3FT. IF TOWER FOUNDATION >18"
ENCLOSE 4/0 AWG IN PVC ON TOWER FOUNDATION
- ④ ROUTE "4/0 AWG THROUGH BUILDING (IF APPLICABLE) WITH
ONE-HOLE STRAP. ENCLOSE CABLE IN PVC PIPE
THROUGHOUT BUILDING WALL
- ④ DIG A TRENCH FROM BASE OF TOWER
(AND BUILDING, IF APPLICABLE) TROUGH
THE COUNTERPOISE. TRENCH SHALL
COMPLY WITH DETAIL (?)
- ⑤ BRUSH COUNTERPOISE CABLE BEFORE CATWELDING
HEAT COUNTERPOISE CABLE TO REMOVE ALL MOISTURE
- ⑥ CADWELD 4/0 TO GROUND PLATE AT TOWER/BUILDING
CADWELD 4/0 TO COUNTERPOISE UNDERGROUND



FROM THE INTERSECTION OF WASHINGTON STATE HIGHWAY #7
IN HARRINGTON PROCEED 7.0 MILES SOUTH ON HIGHWAY 28 TO
A GRAVELED COUNTY ROAD. TURN RIGHT AND PROCEED 630'
NORTH ON COUNTY ROAD. SITE IS ON WEST SIDE OF ROAD.

OWNER: HAZEL E. DORMAIER
c/o EDWARD E. TOPPER, HARRINGTON, WA

LOCATION: S.E.1/4, S.E.1/4, SEC. 2, T.22N., R. 35E.,
WILLAMETTE B.&M. LINCOLN CO., WA

LATITUDE: 47° 25' 23" N

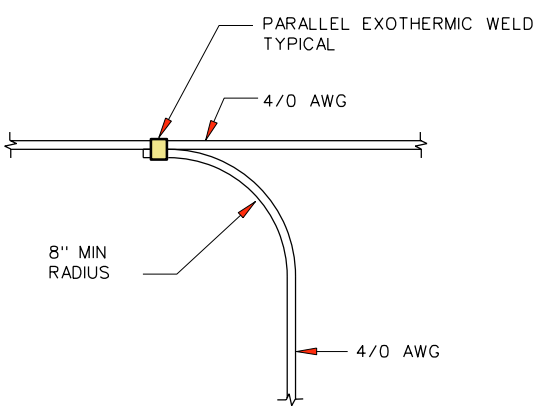
LONGITUDE: 118° 21' 25" W

ELEVATION: 2202.7' MSL (FINISH FLOOR)

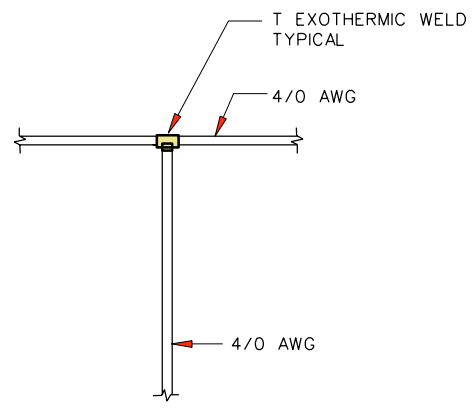
POWER: LINCOLN ELEC. CO-OP.
BOX 164, DAVENPORT, WASHINGTON

NM-D-554-41223-1	ACCESS ROAD -PLAN & PROFILE
D-2109	CLASS "C" FENCE
D-5187-1,2,3,4	CONCRETE MASONRY BUILDING
WE-D-5883-36A,36B,36C	MISCELLANEOUS CONSTRUCTION DETAILS
NM-D-554-26-3,4	LIGHTING PROTECTION FOR RML, PLOT PLAN AND TOWER DETAILS
C-5264-B	FOUNDATION AND GUY ANCHOR LAYOUT
C-5272-B	GUY ANCHOR DETAILS
C-5273	FOUNDATION DETAILS

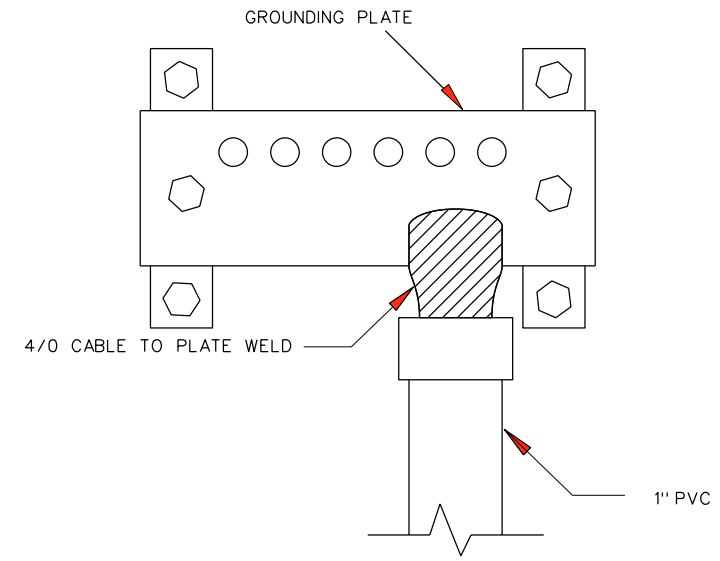
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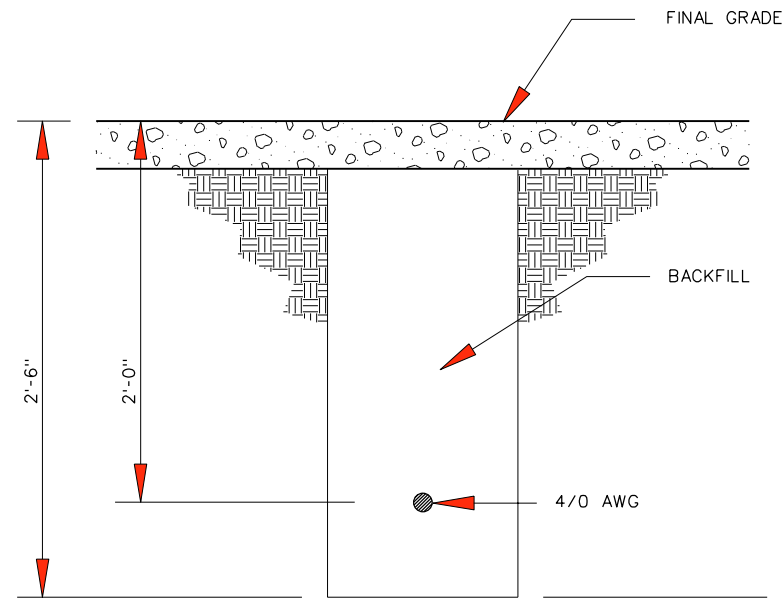
1 TYP PARALLEL CONNECTION DETAIL
E001 NOT TO SCALE



2 TYP T CONNECTION DETAIL
E001 NOT TO SCALE



3 4/0 TO PLATE WELD DETAIL
E001 NOT TO SCALE



4 TYP TRENCH DETAIL
E001 NOT TO SCALE

INSTALLATION NOTES

- ① CADWELD 4/0 AWG TO GROUND PLATES WITH 90 SHOT
CADWELD 4/0 AWG TO COUNTERPOISE WITH EITHER:
200 SHOT FOR PARALLEL CADWELD SETUP
150 SHOT FOR T CADWELD SETUP
- ② IF DISTANCE BETWEEN TOWER AND BUILDING > 10'
ALSO INSTALL GROUNDING PLATE ON BUILDING WALL.
BUILDING GROUND PLATE MOUNTED @ 6' - 8' AGL
- ③ ROUTE 4/0 BARE 19 STRAND COPPER
FROM GROUNDING PLATE TO THE EES
- ④ DIG A TRENCH FROM BASE OF TOWER
(AND BUILDING, IF APPLICABLE) TROUGH
THE COUNTERPOISE. TRENCH SHALL
COMPLY WITH DETAIL 4
- ⑤ CADWELD 4/0 TO GROUND PLATE AT TOWER/BUILDING
CADWELD 4/0 TO COUNTERPOISE UNDERGROUND

REV	APPROVED DATE	DESCRIPTION	JCN	REDLINE DATE	APVD
DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION ATO - TECHNICAL OPERATIONS WESTERN SERVICE AREA RCLR CADWELD DETAILS					
REGIONAL STANDARD					
REVIEWED BY	SUBMITTED BY	APPROVED BY			
PROJECT ENGINEER		MGR: ENGINEERING - SEATTLE			
DESIGNED		ISSUED BY	DATE	JCN	
DRAWN		ENGINEERING SERVICES COMMUNICATIONS	01/12/2010		
CHECKED			DRAWING NO		REV
			NMSD-D-RCLR-E001		

8

7

6

5

4

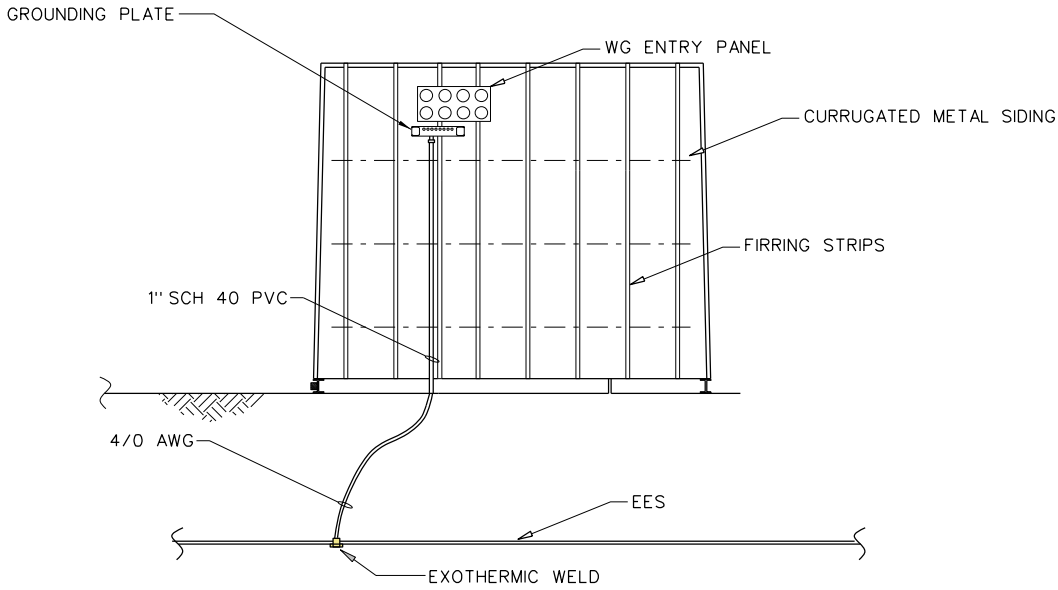
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2

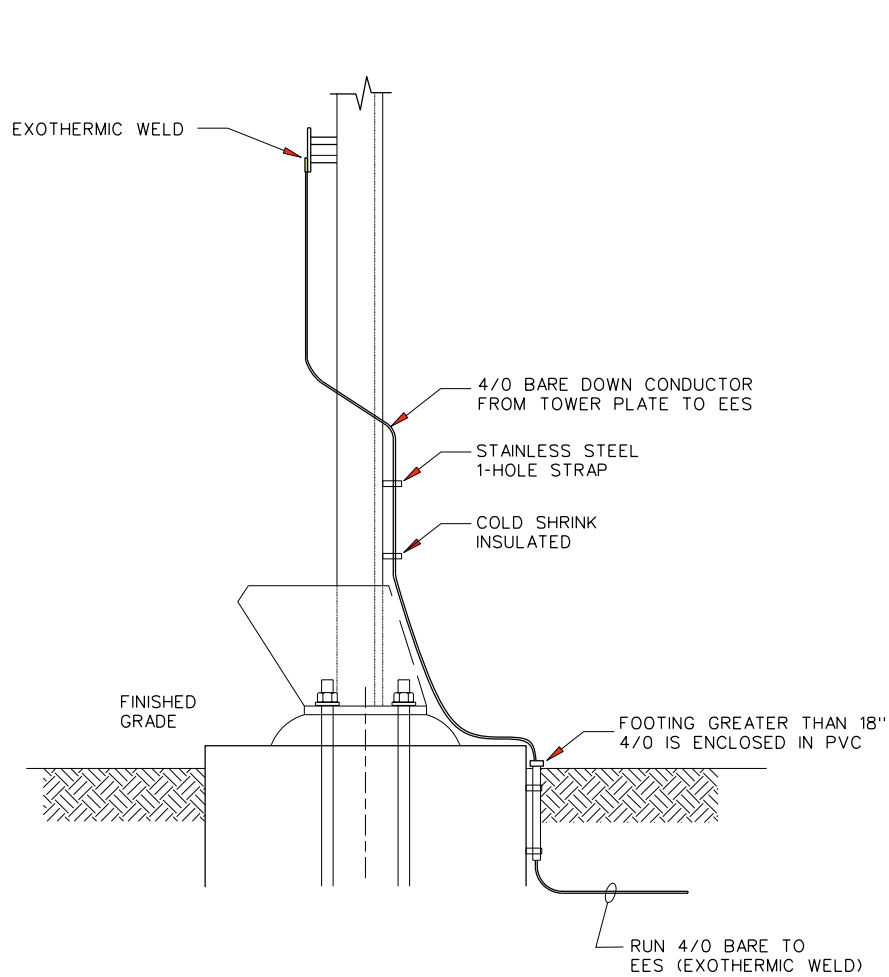
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NOTES

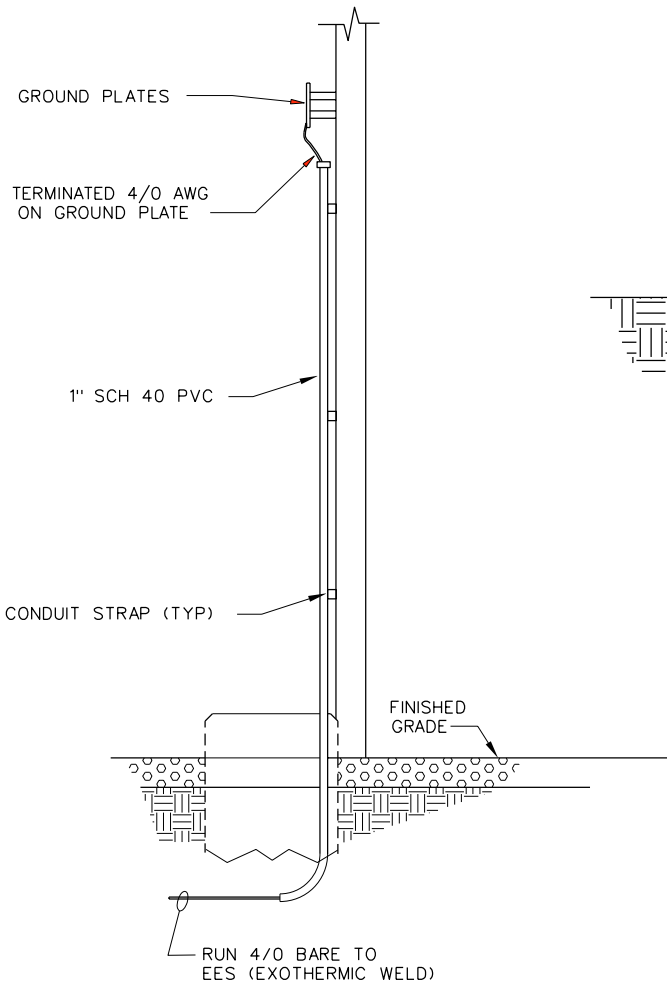
- ① ENCLOSE 4/0 AWG IN SHC 40 PVC (SEE DETAIL 3)
- ② IF TOWER FOUNDATION > 18" THEN ENCLOSE 4/0 IN PVC (SEE DETAIL 2)



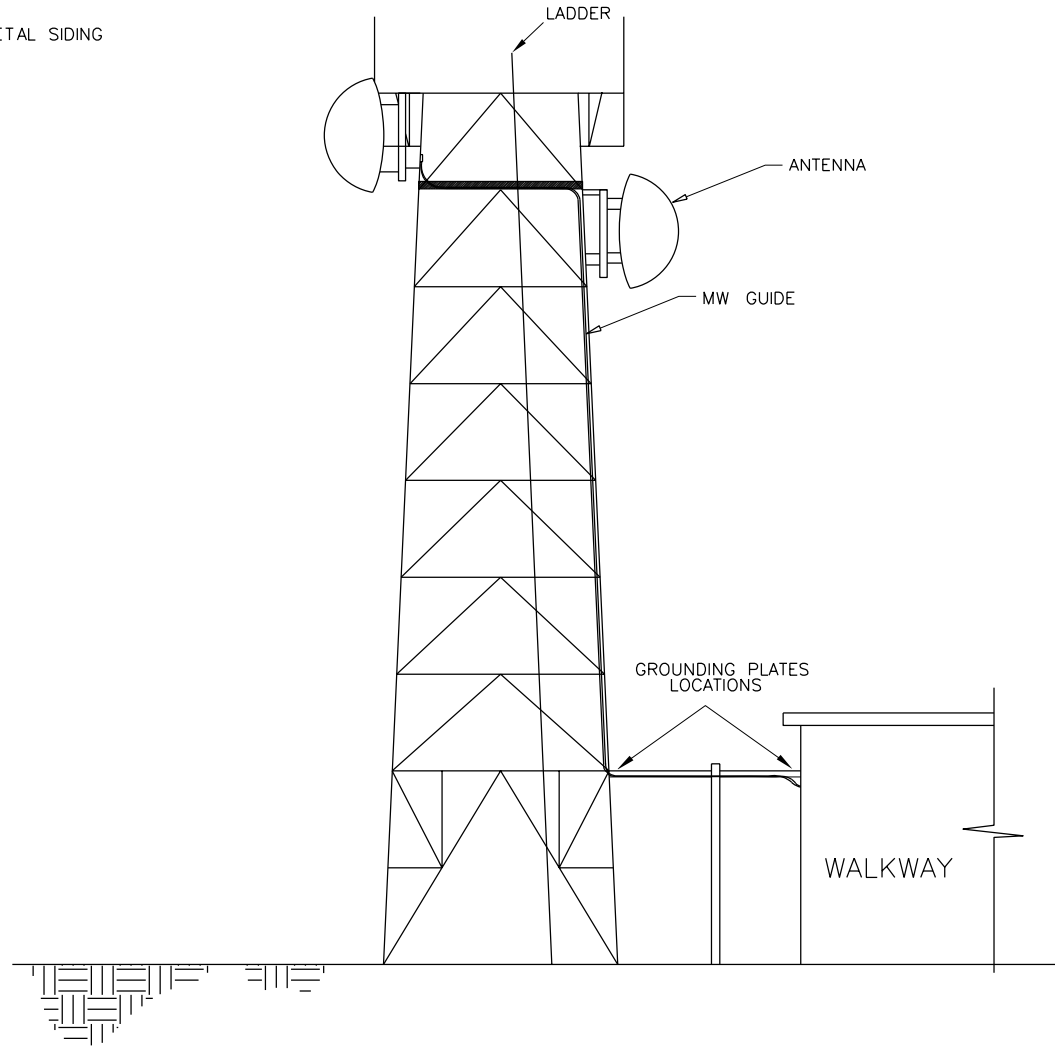
1 EXTERIOR WALL ELEVATION
NOT TO SCALE



2 TOWER BASE ELEVATION VIEW
NOT TO SCALE



3 SHELTER ELEVATION VIEW
NOT TO SCALE

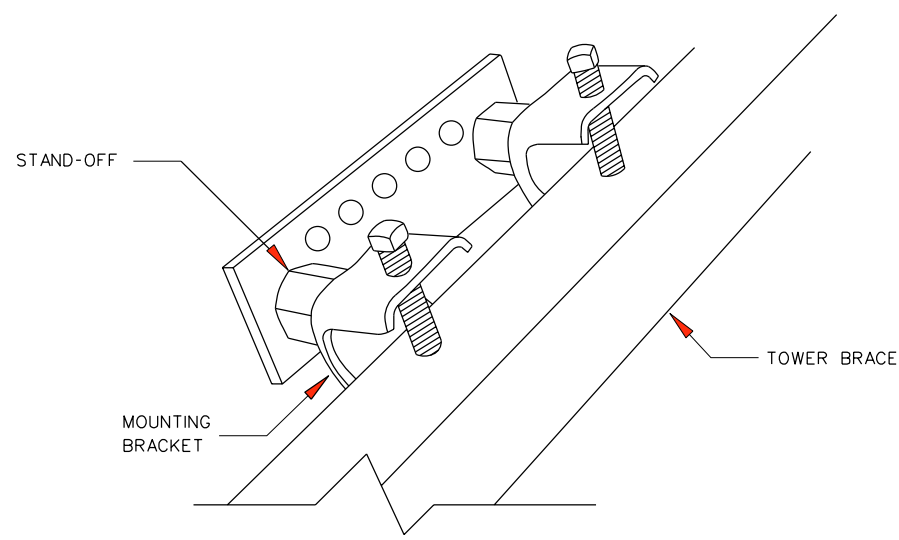


4 SHELTER - TOWER VIEW
NOT TO SCALE

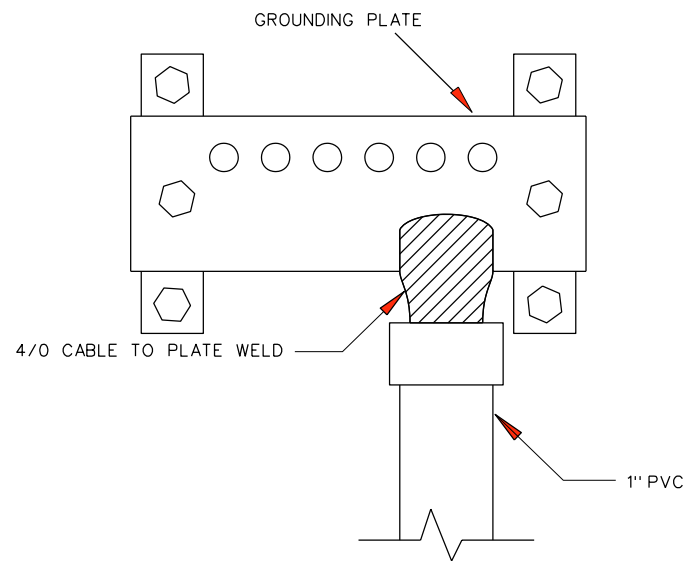
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8 7 6 5 4 3 2 1

H
G
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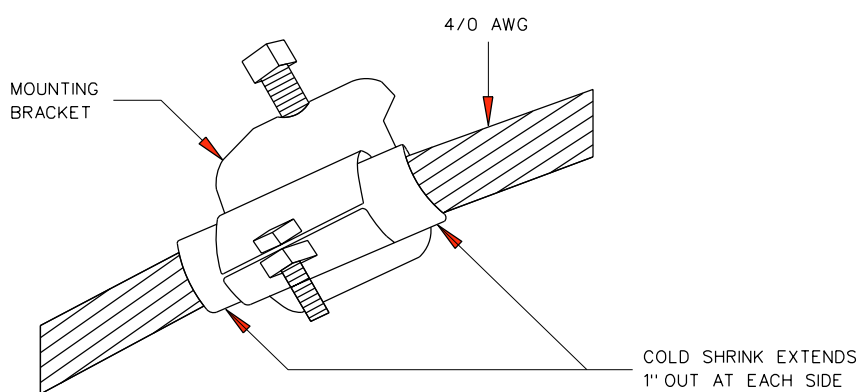
1 PLATE ATTACHMETN DETAIL
E003 NOT TO SCALE



2 4/0 TO PLATE WELD DETAIL
E003 NOT TO SCALE



3 GROOUNDING PLATES DETAIL
E003 NOT TO SCALE



4 COLD SHRINK DETAIL
E003 NOT TO SCALE

NOTES

- ① MOUNT GROUNDING PLATES WITH:
1) PLATE STAND-OFF'S
2) MOUNTING BRACKETS
3) USES 3/4" HARDWARE (SEE DETAIL 1)
- ② INSULATE 4/0 AWG WITH COLD SHRINK (SEE DETAIL 3)

REV	APPROVED DATE	DESCRIPTION	JCN	REDLINE DATE	APVD
DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION ATO - TECHNICAL OPERATIONS WESTERN SERVICE AREA RCLR CONNECTION DETAILS					
REGIONAL STANDARD					
REVIEWED BY	SUBMITTED BY	APPROVED BY		NM	
PROJECT ENGINEER		MGR: ENGINEERING - SEATTLE			
DESIGNED	ISSUED BY	DATE	01/12/2010	JCN	
DRAWN	ENGINEERING SERVICES COMMUNICATIONS	DRAWING NO			
CHECKED		NMSD-D-RCLR-E007		REV	

ISSUED FOR: CONSTRUCTION
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